# Raleigh Amateur Radio Society, Inc.

RALEIGH AMATEUR RADIO SOCIETY
RARS
WORLDWIDE FRIENDSHIP

CLUB CALL: W4DW

REPEATER: W4DW/R 146.04/64

APRIL 1983

ISSUE 157

EXECUTIVE EDITOR: FRANK C. WEISS, KY4W

PRODUCTION EDITOR: ANN M. BRADLEY, WA4APK

# LEADING EDGE

SHERMAN STARNES
W4TZU

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A number of peculiar circumstances have been showing up concerning Russian amateur radio satellites recently. RS 5 telemetry has been sending "EØ1" or "EGØ1" which indicates a dead battery but otherwise the spacecraft is operating normally which is contradictory to the telemetry report. Some speculate that the telemetry report is associated with the messages stored in the satellite memory by amateurs in the Soviet Antartic expedition and their associates in Moscow. Two older satellites, RS 1 and RS 2, after several years of silence were heard by numerous observers in January. They reported reception of invalid telemetry, indicating a weak revival of the worn-out batteries. Finally, in early February, several British amateurs reported hearing signals from a station signing "RSØØ" with doppler shift on its frequency, usually conclusive evidence that the signal is from an orbiting satellite. Subsequently, however, it was determined that the signal emanated from the vicinity of Moscow and was possibly a test of a future Russian satellite.

The UOSAT-OSCAR 9 command station at the University of Surrey has started deployment of the fifty-foot gravity-gradient boom. As has become commonplace with UO 9, a problem has developed. The boom has extended about one meter and is now stuck. A jammed actuating cable is suspected. Telemetry indicates that the gravity-gradient effect is effective enough even at one meter to improve the stability of the spacecraft. A portion of a frame of synthesized voice telemetry was copied at W4TZU on February 20 about 3 p.m. Three typical channels consisted of the spoken numbers "40070 41090 42744". The first two digits are the telemetry channel number and the last three digits are numbers which can be plugged into a calibration equation for the indicated channel. These three channels were decoded to indicate that the +14 volt power supply current was 200 mA., the +5 volt power supply current was 51 mA. and the +5 volt power conditioning module output was 4.96 volts. A complete telemetry frame gives sixty such measurements.

# P.S. as in public service

Bruce Eggers
WA9NEW

Things are kind of quiet around the PS front these days. Last month we asked if anybody was interested in running another Traffic Booth at Crabtree just before the Easter holiday. The phone's been silent on that one and, while the bills keep coming, the mailman hasn't brought any cards or letters from the membership volunteering their services for such a project. Has 97.1(a) taken a back seat to (e)? (And how much 'good-will' is enhanced in the DX pileups?) Perhaps you've made a significant advancement to the radio art in recent months and hence feel that public service need not be a part of your Amateur experience for a while. If so, you're right.

Well, all this Public Service Director promises to be is the Conscience of the Club. No 'Iron Man' for the group. No long harangues at the meetings. You best know how you meet the guidelines contained in 97.1. You best know the value of Amateur Radio.

But the June soccer tounament is just around the corner and I'm going to be looking for YOU to help support the Red Cross then. The number to call is 779-0266.

PS TO P.S.- Late Flash: April 23rd, Hams will be called upon to assist in the March of Dimes Walk-a-thon. More details will be available by April meeting, but it's not too soon to mark your appointment calendar.

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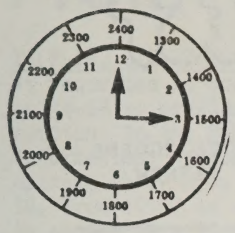
The operating schedule for OSCAR 8 has been modified to ease the load on its ailing battery. The mode A transponder, (2 meters up, 10 meters down), now operates Sunday, Monday and Tuesday, and the mode J transponder, (2 meters up, 70 cm. down), on Thursday, Friday and Saturday, Wednesday being reserved for battery recharge.

With the condition of the free world's only amateur radio communications satellite worsening, it is timely that the Phase 3B satellite is nearing its launch date. That date is now June 3 and is considered firm. Now if only that #@%&*# French rocket works.



# MINUTES OF THE MEETING

The regular monthly meeting of the Raleigh Amateur Radio Society was held on March 2, 1983, at the NCSU Faculty Club for the 4th Annual RARS Awards Banquet. Sixty-seven members and guests were present. The social hour began at 6:30 followed by a delicious buffet dinner. Members and guests were welcomed by President "Doc" Cobb, W4YZX, and officers and spouses seated at the head table were introduced.

A moment of silence was held for Ferenc Pankotay, KY4X, who recently became a Silent Key; and for the father of John Swain, WA4ODT, who recently passed away.

Doc recognized Ann and Jim Bradley, WA4APK and WA4AOO, for their recent TV and newspaper publicity for the Valentines Day lighted heart on their tower. Doc also congratulated Tim Buehlmann, KA4YPV, who upgraded to Tech.

Reid Whitten, AB4W, gave a short report on ARES and asked hams to sign up soon because a total is needed.

Doc made the following awards to RARS members who have made outstanding contributions to the club in the past year:

Lynn Pendleton, K4NYV - for continuing service as Trustee of W4DW.

Ann Bradley, WA4APK - for many hours of work on the newsletter.

Jack Brookshire, N4HBG - for bringing in many new members and continuing interest in RARS and ham radio.

Placques were also given to former officers of RARS for their contribution to the club:

Bill Feehan, WB4EOV - past Treasurer for 4 years.

Cliff Craig, KD4ZE - past Vice President.

Drawings were held for door prizes. Winners were Ann Bradley-WA4APK, Nancy Short, XYL of Walt Short-N4SW, and Pete Bliss-W8DTD.

Entertainment was a most interesting slide show and commentary on the Universe and its Galaxies.

Doc reminded the members that next month's meeting will be held in our new meeting place, the First Presbyterian Church, 116 South Salisbury Street.

After an evening of good fellowship, food and drink, awards and entertainment, the meeting was adjourned.

Marty Silver, NY4H
Secretary, RARS

The following bit was first printed a couple of years ago at Hamfest time. It's timely, it's true, so let's play it again.

KEY WORDS

Xvxn though my typxwritxr is an old model, it works quitx wxll xxcxpt for onx of thx kxys. I havx wishxd timxs that it workxd pxrfxctly. It is trux that thxrx arx forty-thrxx othxr kxys that function wxll xnough, but that onx kxy makxs thx diffxrxncx bxtwxxn a good pixcx of typing and a poor onx.

Somxtimxs it sxxms to mx that pxoplx forgxt how nxcxssary thxy arx to RARS and thx Hamfxst. Thxy say, "I'm not important--what can onx pxrson do??" Thxsx pxoplx nxxd to bx rxmindxd that, likx my typxwritxr kxy, thxy arx nxxdxd. Xach of you is an intxgral part of this club and if onx part is not functioning, thx club and the hamfxst will bx lacking in whatxvxr it is that you can contributx.

So thx nxxt timx any of you fxxl you arx not important, rxmxmbxr my typxwritxr and say, "My hxlp is nxxdxd! As a mattxr of fact, I am the kxy to a succxssful Hamfxst!!

# CW CONTEST

.... .. - .... . .-. .

All key clickers and/or chirpers are invited to the RARS Hamfest CW Contest to be held at the Crabtree Valley Mall at 1300 hours on Sunday 17 April. Paper will be furnished and plain text code will be transmitted over a loudspeaker hung above the contest table. Bring your own pens or pencils and typewriters or mill machines. Your name and home QTH must be written on your entry for the Contest. If the winner can be determined during the Hamfest, VFB. But if not the prize will have to be mailed, hence the name/QTH requirement. No name, no prize. A sample run will be transmitted and then successive runs of 20-25-30 wpm will be transmitted. For any survivors, text will be transmitted at successive increments of 5 wpm. The winning entry will be that paper which has the longest string of correct characters that can be read by the judge. This caveat is important for those people whose writing--unlike good writers like me, for instance--can only be deciphered by themselves. The judge(s) must be able to read your entries. Actually there is really no excuse for sloppy writing. By the way, no changes to your copy may be made after code transmissions are stopped. Perhaps to some-the losers-these may seem like picayune constraints but, in truth, they are not. Only in this manner can the truly top CW artist stand up. Rots of ruck to all of you who enter and may the best bug win. My best 73s to Bob, K4 Master Chirper, who gave me insight into how to set up this Contest. And you do have a chance to win.--- Bob's not participating. He's honcho of the RARS Auction Table (Sighs of relief---rolaids--heard across the Old North State and Lower Slobbovia, i.e. Riceland.

Now .-. . .- -.. -.-- --- -.

- .... . .-. .. --. .... -

BERT BAILEY, W4FMN

# HAMFEST FLASH

by
BRUCE EGGERS
WA9NEW

EXTRA! EXTRA! READ ALL ABOUT IT! !

HAMFEST HOSPITALITY ROOM NOW ON ! !

The Crabtree Mall folks have finished their work on converting the former West Community Room to a storage room. Left over from that project is a portion of the old room, reportedly about half as large as the former room, and this space will be available to RARS for the Saturday night hospitality get-together and for meetings on Sunday.

The vendor mailings made some weeks ago. At this writing, only three confirmations. A covert attempt made to attract increased participation from computer dealers. We may have a few surprises in that department. (One surprise may be that none will show!) Very favorable response from vendor with satellite and video recording gear. Not yet confirmed. Some committee chairmen still looking for help. (See accompanying articles.) All else progressing well.

Sponsoring a hamfest is not an easy job. It takes a lot of work. It takes a lot of people. It takes a lot of dedication. Is it worth it? I don't know. I've been to a lot of hamfests in my time. I suspect most of you have too. I go because I like going. I know nobody "makes money" (except maybe the vendors) at a hamfest. But I also know there's no such thing as a free lunch. If I want to be able to go to hamfests, I've got to be willing to do my part. I think this year's bash has a good cross section of newcomers and oldtimers all pulling together. Are you doing your part? Does the RARS Hamfest continue to grow? If so, it'll take more the next time.

CLUB TABLE, BOB CORNS, K4MC - Let us do your flea marketing. Bring your gear to the club table, tagged with sale price and your call or name. This leaves you free to do the rest of the work in "our thing." I need a few volunteers to help man the table.

# From the Chairmen---

TALK-IN, JIM PEELER, WA4YOM - Assistance is requested to operate the talk-in station on 04-64 to provide out-of-towners with directions to the hamfest and other general information. Volunteers are needed to operate their home station Saturday, April 16, from 10:00 am - 10:00 pm. The talk-in should be active Sunday, April 17, from 7:00 am to 12:00 noon. The Sunday operation can be done from your home station or from a station that will be available at the Hamfest site. If you would like to assist for an hour or so with the talk-in, please contact Jim Peeler, WA4YOM, at 787-6036 after six in the evening or at the RARS April meeting. Thanks.

PRIZES, CHUCK LITTLEWOOD, K4HF - Don't forget to patronize G.I.S.M.O., Amateur Associates, Discom Sales, and ARRL who helped RARS with many of the 1983 Hamfest Prizes. Good prizes are one way RARS says "thanks" for attending our hamfest. As usual, all RARS members are eligible for all prizes under the same rules as other attendees.

TICKETS, FRANK & LAVERNE WEISS, KY4W & KA4ULZ RARS members who want to sell HAMFEST tickets should call Frank or LaVerne at 781-9049 for time slot assignment. Ticket sales will be from 7:00 am through 1:00 pm. There will be tables and chairs provided by the "Table Committee." Ticket stations will be at both the east and west ends of the Hamfest area. a minimum of two people at each station are required at all times. Dress warmly as the ticket stations are in the shade until noon. See you bright and early (6:45 first group) on the 17th. Frank, KY4W & LaVerne, KA4ULZ

HAMFEST TABLES, DON DEITER,K4GHJ - This year the tables will be delivered on the morning of the hamfest and will be dispensed from the truck. To keep track of those which are rented, we will make a record of each table and ask for identification of the person getting it. This way we can be assured that all tables are returned to the truck at the end of the day and give us some assurance that all will be returned. The table committee will need some help at the end of the day to make sure that the tables are put back on the truck and all are accounted for, so anyone who might feel left out on the arrangements and need a committee to work on, get in touch with Don Deiter, K4HGJ. Tnx.

SET UP/SOUND, JIM BRADLEY, WA4AOO - From past experience, the set up/sound operation is best done in stages. First step is Chairman's problem. Get the equipment together and check it out. I plan to use the club's amplifier system with the multi-speakers used in the past. I could use a back-up system. If anyone has a 50 watt or better audio amplifier they will lend, please let me know. On Sunday, April 10, when Crabtree is quiet, we string the wire for the speakers. This should require about 2½ hrs. Then Saturday afternoon, April 16 from 4:00 to 5:00, we'll attach the speakers to the wire. Hamfest Sunday, we begin 6:00 to 6:30 am with an early breakfast (Dutch treat) at "Your House Restaurant" on US 70 about two miles west of Crabtree. All early bird Hamfest enthusiasts are welcome. Then we rope off the area, set up the stage, hook up the sound system and enjoy the rest of the day. After Hamfest, the speakers must come down but the wire can wait until the following Sunday. This makes for less hassle when there's other clean-up to be done. I have half a dozen willing volunteers. I'll be contacting them soon. Others who can lend a hand, please call me at 851-2437 or come on out at the aforementioned times. The more the ~~merrier~~ easier. Tnx, Jim, WA4AOO

Remember - "Ve haf vays of making you enjoy this!"

HOSPITALITY, PETE THACHER, N4HQZ - This is a "HAMTEST." Check all answers that apply to you.

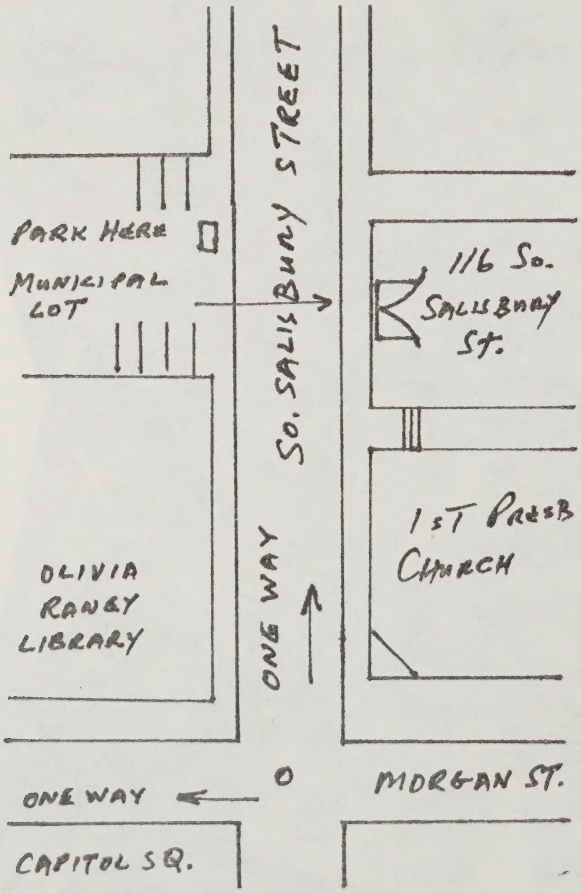
I like to/would like to, am/was/will be:

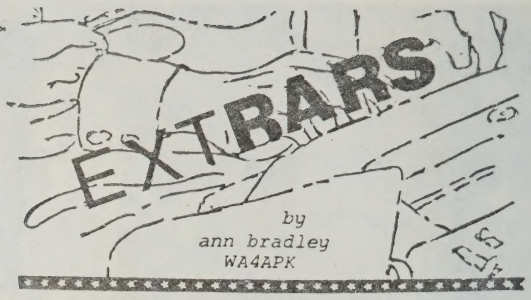
(1) Talk to other hams/XYLs/people
(2) Help other hams/XYLs/people
(3) Have fun
(4) Make, bake, concoct, eat goodies
(5) See the face behind the 2m/hf speaker
(6) Tell/swap/make up stories
(7) Win door prizes
(8) Related to/friend of/foe of a ham
(9) DUMB TEST
(10) All of the above.

Score 1 pt. for each answer. If total is 1 or more, you are a candidate for the RARSHHH (RARS HAMFEST HOSPITALITY HOURS) at the old Crabtree Meeting Room Saturday, April 16 from 7:00-10:00pm If you checked Number 4, bring your culinary delight along. Liquid refreshment will be compliments of RARS. Three armed guerrillas will be at the door to check for proper attire and attitude which includes but not limited to: 1. name badge, hat, T-shirt with your name and call, 2. a warm smile, 3. a "Hello, my name is..." attitude. Plain clothesmen will be circulating and anyone found not having a good time nor engaged in a QSO will spend 5 minutes serving drinks to perfect his neuromuscular and social skills. 73, Pete, N4HQZ

APRIL RARS MEETING - NEW LOCATION********

Last month's newsletter contained a complete report on our new meeting facilities at the First Presbyterian Church at 116 S. Salisbury Street. If you've already used the March Issue for the bottom of the birdcage, let me remind you. If you're going into Raleigh on Morgan Street, turn right at Salisbury Street. The Church is on the right; on the left is a municipal parking lot next to Olivia Raney Library. If you make a bee line directly across from the parking lot, you'll bump your nose on the sign that says "RARS Meeting." The building is adjacent to the Church. The door is at street level and on either side are large glass windows with drapes. Again, the number is 116 South Salisbury Street. Don't get lost, now! There will be a lot of Hamfest business to be finalized. And Bert Bailey, W4FMN, has some words of wisdom for us concerning "Simple Antennas."




At the Awards Banquet, Tim Buehlman, KA4YPV, had just that day acquired his Technicians ticket and was sporting a brand new Kenwood TR2500 to go along with it. Congratulations, Tim! We'll be listnin' for KA4YPV/Interim NF.

**********

The very next day, March 3, Pete, N4HQZ, took himself to Greensboro for his Advanced ticket. Also learned (by eavesdropping) that Pete just received the last card for his WAS--and he only started in January. You have been busy, Pete. Nice going!

**********

Guess EXTRARS is a little remiss in its duty. Should have welcomed 1983 member, Peter Bliss, W8DTD. Now I can also say Congratulations for winning the drawing for 1983 membership. If there others I've overlooked, it's lack of communications, not lack of interest. Apologies.

**********

Learned on the net from Will, K4IWW, that the Cary Foxhunt was another success. Reed, AB4W, and Harry, AB4T, had stashed the "Fox" in a downtown park near the Natural History Museum. It was discovered within half an hour by Carl, N4PY, and Allen, K4PB. They will be the fox next go 'round. Congratulations, you two!

**********

As usual, Charlotte Hamfest was just great. Saw lots of Folks from Raleigh and Cary. I guess, like me, you all came away with an empty wallet, tired feet, and a happy heart. Super after a long winter to get out and rag-chew with folks you haven't seen in a while, isn't it?

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EXTRARS wishes to thank Walt Short, N4SW, for the photographs of the Awards Banquet which appear in the "Centerfold". Now we're getting somewhere!

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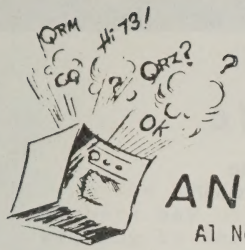
RARS News sez, "Hope each of you has a Happy Easter." And the Easter Bunny told me he wishes RARS a "Happy Hamfest."




# SIGNALS AND NOISE

Al Nowakowski, W4VP

*Every life leaves a trail of anniversaries, some pleasant, some painful. I am approaching one that has had a significant role in my life, and since all of you are unwittingly a part of it, I'll take a few moments to celebrate it.*

*I cannot honestly remember how I first discovered ham radio. I clearly remember SWL'ing the broadcast band with an ancient table model Philco, but there were no hams there. Maybe it was the first time I anxiously squandered some allowance money for a copy of Radio and TV News. Or perhaps it was when I finally finished assembling that Knight Kit "Space Spanner" receiver that I first heard some hams. Whenever it was, once I became aware of ham radio, I was hooked. I was all of 14 and getting on the air became the most important goal in my life. In a few weeks I will have held a ham ticket for twenty-five years.*

*Twenty-five years is a long time to keep at any one hobby. You collect a lot of baggage going down that long a road. The tangible baggage is not that impressive; thirty-four log books, five shoe boxes full of QSL's, and licenses for five different calls. Just a lot of paper. But the intangible baggage, that's where the inventory gets a little harder.*

*How about a college education paid for by a scholarship based on an interest in engineering, and awarded most likely because of the enthusiasm displayed by a young evangelist for ham radio in front of the selection committee. (There were two hams out of about a dozen contenders for those three scholarships that year. Both were awarded scholarships.)*

*Then there is the career in electronics that followed, a career centered on communications.*

*Add to the list countless hours of pleasure building and operating ham gear, and the many good times shared at hamfests, field day, etc.*

*Throw in a large measure of education in the subtle arts of patience, persistence, and acceptance nurtured by DX'ing and include a little technical proficiency.*

*But the most important part of the inventory is the people I've met through ham radio, the thousands of friends who share the fascination of radio.*

*My oldest and dearest friends are from my early days as a ham. Many of my newest friends are also hams. Between them stretches a chain of friendships that transcends borders and barriers of race, creed, politics, language, and age.*

*There are the distant friends who call me by name and are genuinely happy to hear my signal even though we have never seen each other's faces, or even heard each other's voices.*

*There are the close friends who have celebrated my joys and endured my agonies, who have lifted my spirit and in return have asked nothing more than to share our common interests.*

*Twenty-five years is a long time to stick with one hobby. You collect a lot of baggage on a trip that long. But my ham radio baggage is filled with treasures beyond value. I look forward to another twenty-five years worth.*

## Sympathy

RARS wishes to extend sympathy to John Swain, WD4ODT, and family in the loss of his father on March 1.

**********

RARS is saddened by the sudden death of member Frank Pankotay, KY4X. Frank had a serious heart attack in May of last year and then on February 25, he suffered a second and fatal attack.

Frank had come to the United States from Hungary and was Manager of Product Engineering at ITT Telecommunications Corp. He was avidly seeking 5 band DXCC and had been soliciting help from RARS DX community. He loved this country and he loved ham radio. All who knew him will miss him deeply.

Ann,

I have had several requests from contacts on the air for info on my slingshot antenna, and reading your PLEASE note in the last newsletter, I have taken pity. Thinking that if some of my far-flung radio friends are interested, then maybe some RARS members might be also.

Pete N4HOZ

Pete - Thanks a bunch. This is exactly what I had in mind. Only hope you weren't the only one inspired by my plea. See how easy it is, Folks! C'mon now, follow the leader. Ann, WA4APK

A 136 FT ALMOST INVISIBLE
TRI-BANDER + 1 FOR +/-$25

Thought I might pass along an antenna that I found has much merit. It is not a new antenna, but one which, at least in my limited time hamming, appears to be somewhat rare. My dad W1HZQ has used it since the 1930's w/ success and of course when I finally got my ticket, one went up in Raleigh. I call it a BENT SLINGSHOT WINDOM(BSSW), BS is for Big Super Signal, of course; because it is bent, was put up with a slingshot and W1HZQ called it a windom. Whatever it is, it works extremely well on 20,40,80, and 75, (tnx to W3EZR for telling me where the illusive 75 band is, must be a frequency question on the extra exam) SWR across all 4 bands only exceeds 2:1 when it rains hard and normally runs 1.5:1 or less and it loads without difficulty.
It seems to be part-dipole and part long-wire since its has radiation characteristics of both. The original design, I have been told exists in the 1955 Handbook,(if anyone has one pls bring to next meeting, I would like to puruse). The std windom is 134 ft long 44.4 on one leg and 89.6 on other and is installed in a straight line. This point must be the 300ohm spot. My dad used 2 such animals, one EW and one NS for 360 deg coverage. Since my lot and more vitally my trees are not so confiqured, I put one up with a 100 deg angle in the middle.(short side EW and long NS).

I investigated the ant theoritically and it appears(using the formula for a long wire) that the ant is the correct length to be integer multiples of frequency harmonics in the center of the ham bands. Dipole freq is 3.5mhz Long wire 2nd harmonic at 7.2,3rd at 10.95,and 4th at 14.5. using long wire equations. (this may be pure bull, but it sounds good).
Being bent in the middle it appears that radiation is not off the sides of the wires but off the sides of an imaginary line drawn thru the angle of the bend. Since my imaginary line points NE-SW, that may account for consistent 59 reports from Oregon and Washington vs 59 from Southern California on the same frequency and same UTC. But for some reason (end effects maybe),it also goes 59 to Fla and Maine, So it makes a great East-Coast antenna. (WAS on 75 since Jan 1). Nuff on what and why now how; U need (one place to get).

1. 134 ft wire(10 or 12) bare or covered.(.06/ft at Ace)
2. 4 insulators
3. a 4:1 balun
4. 300 ohm TV wire(k-mart)
5. nylon rope(.06/ft Mill Outlet) or cable(K-mart again)
6. Twine
7. sling shot(K-mart $6 or use mine)
8. round fishing wts with hole in center(.25 guess where).
9. spinning fishing rod(borrow)
10. 50ohm coax
11. Strong right arm
12. Helper(optional).
13. 3 Trees or other supports

# ATTENTION ALL RARS MEMBERS

The following items are owned by RARS and are going to be sold. Members may offer to purchase any of these items by submitting bids in writing to RARS. Please note that some items have a minimum bid, while for others, any and all bids are welcome. The cutoff date for submission of bids is April 6, ]983, at our regular meeting.

| | | |
|---|---|---|
| 1. | One Moseley TA-33 Tri-band beam, excellent condition. | Min.Bid. $80 |
| 2. | One Moseley TA-33 Tri-band beam, some damage, traps good.All parts and hardware. Needs some aluminum tubing for repair | Min.Bid. $40 |
| 3. | One Forty foot push up mast. Good condition | Min.Bid. $10 |
| 4. | One Thirty foot push up mast. Good condition | Min.Bid. $10 |
| 5. | One Ham IV Rotator In like new condition | Min.Bid.$110 |
| 6. | 200 feet of rotor control cable in three pieces. | No Min. |
| 7. | Two 100 foot lengths of RG-8X | No Min. |
| 8. | One Icom IC-22A two meter transceiver. Good Condx. | Min.Bid.$100 |
| 9. | One 1500 watt electric space heater with blower | Min.Bid. $10 |
| 10. | One 450 MHz 4- element Cushcraft beam. New | No Min. |
| 11. | One Realistic Mobile Mike. | No Min. |
| 12. | Three Exide LEC-36 Six Volt batteries | No Min. |
| 13. | One power supply-Charger in cabinet with touch-tone pad | No Min. |

If you wish to bid on any of these items, submit your bid in writing to RARS at the address on this newsletter. Successful bidders will be notified at the April meeting.

Cut wire to 2 sides and attach an insulator to each end. Connect middle with 2-3" of cable between insulators for strain. 1 leg of 300tv to each leg, lay out on gnd. put fishing line through weight and tie SECURELY, or double ur insurance. weight in slingshot, release drag on fish pole and let fly. As any good artilleryman will tell you 45deg angle for max range, 90 for altitude so shoot at about 75. Deflection is your problem.
Cut wt off attach twine and reel twine over tree. attach cable or rope to twine and pull over tree branch. attach ant to rope and put up. 60-70' feet up is easy. 90' takes more sling. tie rope off to bottom of tree. run 300 TV to near house, attach balun and run coax into rig. Fire the thing up and go. Do it now before the leaves come out. Wonder what would happen with 15m traps? umm.

Pete Thacher N4HQZ

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Telephone Info: Hookup for series 500 instruments (Bell) can be found in the April issue of 73, 1975 Bob, K4MC

RALEIGH AMATEUR RADIO SOCIETY, INC.
P. O. BOX 17124
RALEIGH, NORTH CAROLINA 27619

BULK RATE
U.S. Postage Paid
Raleigh, N.C.
Permit No. 1731

RARS meets each First Wednesday at 7:30
First Presbyterian Church - 116 South Salisbury St.

# Calendar

April 6 - Regular RARS Meeting
Location: 116 S. Salisbury St.

April 17 - RARS 11th Annual Hamfest
Crabtree Valley Mall

April 20 - RARS Advisory Board Meeting

April 29/1 - Dayton, Ohio Hamfest

April 30/1 - Kingsport, Tn. Hamfest
Greenville, S.C. Hamfest

May 3 - FCC Exams, Wilmington, NC

May 4 - Regular RARS Meeting

May 7, 8 - ARRL 1983 Roanoke Div
Plng Mtg - Myrtle Beach

May 14 - Durham, N.C. Hamfest

May 29 - Roanoke, Va. Hamfest

June 5 - Manasas, Va. Hamfest